

**MAINTAINING A COMPUTER-GENERATED DESIGN MODEL.****CROSS REFERENCE TO RELATED APPLICATIONS**

This application claims priority to U.S. Provisional Application No. 60/187,233 filed

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**BACKGROUND OF THE INVENTION**

Computer-aided design (CAD) software allows a user to construct and manipulate models of complex three-dimensional (3D) designs of objects. A number of different modeling techniques can be used to express an object's design. These techniques include solid modeling, wire-frame modeling, and parametric modeling. Solid modeling techniques provide for a topology and surface connectivity-based modeling paradigm. Solid modeling techniques support modeling of 3D objects as collections of interconnected edges, faces, and surfaces. Wire-frame modeling techniques, on the other hand, can be used to represent a model as a simple line drawing. Wire-frame modeling techniques may help provide for computer-efficient modeling of objects. Parametric solid modeling techniques allow a model designer to define parameters interconnecting different components of a model. Parametric modeling can facilitate propagating changes among components. CAD systems may combine these, and other, modeling techniques. For example, solid modeling and parametric modeling can be combined in CAD systems supporting parametric solid modeling.

Parametric solid models are commonly used in 3D mechanical design processes. In a 3D design process, a designer may model an object from a collection of parts. Typically, a designer constructs the parts (or obtains them from a library of pre-constructed parts) and then brings those parts together in an assembly. An assembly may contain other assemblies, referred to as subassemblies, as well as solid model parts. The solid model parts and subassemblies are referred to as the assembly's components. As a design progresses, the designer re-arranges and re-groups components, thus restructuring the assembly.

As a designer models an object, the designer may find it necessary to restructure portions of a model by, for example, inserting, deleting or rearranging assemblies. When a designer restructures an assembly, the designer may remove components from the assembly, create a new assembly in which those components are rearranged independent of the remaining original assembly, and then add the new assembly to the original remaining assembly to create the restructured model. Other CAD systems may restructure assemblies by modifying software pointers to re-order components. Still other restructuring methods